
Enhancing Environmental Security and Transboundary Cooperation in the Golok/Kolok River Basin

Part I: Project Information

GEF ID
10794

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT No
NGI No

Project Title
Enhancing Environmental Security and Transboundary Cooperation in the Golok/Kolok River Basin

Countries
Regional, Malaysia, Thailand

Agency(ies)
FAO

Other Executing Partner(s)
Thailand Office of National Water Resources (ONWR); Malaysian Department of Irrigation and Drainage (DID)

Executing Partner Type
Government

GEF Focal Area

International Waters

Taxonomy

Transboundary Diagnostic Analysis and Strategic Action Plan Preparation, International Waters, Focal Areas, Strengthen institutional capacity and decision-making, Influencing models, Communications, Awareness Raising, Behavior change, Beneficiaries, Civil Society, Non-Governmental Organization, Stakeholders, Academia, Community Based Organization, Private Sector, Large corporations, SMEs, Individuals/Entrepreneurs, Local Communities, Women groups, Gender Mainstreaming, Gender Equality, Gender-sensitive indicators, Knowledge Generation, Knowledge Exchange, Capacity, Knowledge and Research, Learning, Adaptive management, Freshwater, Transform policy and regulatory environments, Type of Engagement, Participation, Partnership, River Basin

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 2

Duration

48 In Months

Agency Fee(\$)

380,000.00

Submission Date

3/22/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
IW-3-5	GET	1,000,000.00	10,026,000.00
IW-3-6	GET	2,500,000.00	12,010,000.00
IW-3-7	GET	500,000.00	6,000,000.00
	Total Project Cost (\$)	4,000,000.00	28,036,000.00

B. Indicative Project description summary

Project Objective

The project will improve transboundary management of flood risks and erosion processes, and develop jointly agreed and evidence-based investment plans that will be needed to reverse degradation trends and enhance environmental security in the Golok/Kolok. Disclaimer: This project is without prejudice to Thailand's or Malaysia's rights with regard to the land boundary under international law.

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 1: Establishing a jointly accepted evidence base for joint flood management and erosion control.	Technical Assistance	Outcome 1: Consensus among countries sharing the Basin, and all stakeholders and water users – including de minimis - on the present and likely future threats that impact the sustainability of the shared freshwater resources and dependent ecosystems.	<p>Output 1.1: Transboundary Diagnostic Analysis (TDA) defining the baseline conditions of the Basin freshwater resources and dependent ecosystems, and identifying the main transboundary issues of concern with focus on erosion and floods.</p> <p>Output 1.2: Joint detailed basin-wide survey of issues affecting erosion and siltation of the Golok/Kolok River mouth.</p> <p>Output 1.3: Assessment of impacts of planned infrastructure on flood risks.</p> <p>Output 1.4: Water, pollution and land use management options and opportunities identified to reduce flood risks, mitigate erosion, growing contamination of surface and groundwater resources, and loss of freshwater ecosystem services.</p> <p>Output 1.5: Water and Gender analysis at the basin level, including collection of sex disaggregated</p>	GET	1,200,000.00	1,026,000.00

data.

Output 1.6: National level training for data collection, analysis, assessment and management to support TDA.

Output 1.7: Development of a training module for gender analysis.

Output 1.8: Training on the conduct of Gender Analysis and application of indicators, and on the collection of sex disaggregated data on water related matters.

Component 2: Strengthening cooperation mechanisms for transboundary flood control and erosion management.	Technical Assistance	Outcome 2: Agreement on a Basin long-term Vision and on common environmental quality targets.	Output 2.1: Strengthened mandate and institutional capacity of the Joint Golok/Kolok River Basin Commission and long-term EQ targets. Output 2.2: Agreement on the management of factors contributing to the shifting of the Golok river mouth in place. Output 2.3: Jointly designed flood mitigation plans. Output 2.4: Developing detailed specifications for regional data management system to support freshwater management in the Basin. Output 2.5: Shared Vision for the transboundary- basin agreed upon by the Joint Commission.	GET	500,000.00	310,000.00
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Component 3: Piloting nature-based solutions for improved transboundary flood and sediment management.	Technical Assistance	Outcome 3: Small-scale pilot interventions inform the key actions needed to address transboundary problems.	Output 3.1: Pilot activities addressing priority problems identified by the TDA defined and implemented. Output 3.2: Identification of sustainable financing to replicate/upscale successful pilot actions.	GET	1,559,524.00	25,000,000.00
Component 4 Defining actions for joint implementation.	Technical Assistance	Outcome 4: Agreement reached on joining forces and financial resources for reversing degradation trends in the basin.	Output 4.1: A Strategic Action Program (SAP) emerging from a consultative and participatory process listing key priority reforms and investments that the countries are willing to undertake in the short-term to increase environmental security in the Basin, agreed upon and submitted for endorsement by at least one Minister from each country. Output 4.2: The development of an outline and prioritization of medium to long-term actions to increase environmental security in the Basin, agreed upon and submitted for endorsement by the two countries. Output 4.3: A Partnership Conference held to present the SAP to international donors and IFIs, the private sector, relevant Convention Secretariats, and ensure financial and political support to SAP implementation.	GET	150,000.00	150,000.00

Component 5: Fostering broader adoption and stakeholder participation .	Technical Assistance	Outcome 5: Monitoring, evaluation and dissemination of the project's progress to impacts reinforce stakeholders' capacity to participate effectively in the sustainable management of the Golok/Kolok River Basin water resources.	Output 5.1: Annual Stocktaking Meetings with the participation of all stakeholders, civil society, the private sector, ongoing complementary projects, and the national and regional media. Output 5.2: Gender mainstreaming in all activities throughout project implementation. Output 5.3: Information management and stakeholder involvement and communication strategies.	GET	200,000.00	60,000.00	
Outcome 6: Realizing cross-project synergies.	Technical Assistance	Outcome 6: Coordination mechanisms with ongoing relevant projects and plans, at the national, regional and global levels, encourages synergies while avoiding duplication of efforts.	Output 6.1: Full participation to IW LEARN activities, establishment of Website. Output 6.2: Participation to GEF IW Conferences.	GET	200,000.00	60,000.00	
Sub Total (\$)					3,809,524.00	26,606,000.00	
Project Management Cost (PMC)							
					GET	190,476.00	1,430,000.00
Sub Total(\$)					190,476.00	1,430,000.00	
Total Project Cost(\$)					4,000,000.00	28,036,000.00	

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Recipient Country Government	Government of Malaysia	In-kind	Recurrent expenditures	14,000,000.00
Recipient Country Government	Kingdom of Thailand	In-kind	Recurrent expenditures	14,000,000.00
GEF Agency	FAO	In-kind	Recurrent expenditures	36,000.00
			Total Project Cost(\$)	28,036,000.00

Describe how any "Investment Mobilized" was identified

In dialogue with the Director General of Water Resources, and the Under-Secretary of Water Resources of Malaysia, a number of project related investments and activities to be implemented during the next five years and complementary to the project being proposed were identified. They include USD 75 million for flood mitigation in the Golok/Kolok River Basin, and additional funding for integrated river basin planning and water uses mapping and other relevant initiatives. Only \$14 million have been counted as co-investment, according to what falls into the expected timeframe of project implementation. Thailand's Office of National Water Resources (ONWR) at the Office of the Prime Minister provided detailed investment plans for conservation, irrigation and overall water management in the Golok/Kolok River Basin for the next five years. These investments are approved allocations from the national budget.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Regional	International Waters	International Waters	4,000,000	380,000	4,380,000.00
Total GEF Resources(\$)					4,000,000.00	380,000.00	4,380,000.00

E. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

150,000

PPG Agency Fee (\$)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
FAO	GET	Regional	International Waters	International Waters	150,000	14,250	164,250.00
Total Project Costs(\$)					150,000.00	14,250.00	164,250.00

Core Indicators

Indicator 7 Number of shared water ecosystems (fresh or marine) under new or improved cooperative management

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Shared water Ecosystem	Golok			
Count	1	0	0	0

Indicator 7.1 Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Golok	2			

Indicator 7.2 Level of Regional Legal Agreements and Regional management institution(s) (RMI) to support its implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Golok	1			

Indicator 7.3 Level of National/Local reforms and active participation of Inter-Ministeral Committees (IMC; scale 1 to 4; See Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Golok	1			

Indicator 7.4 Level of engagement in IWLEARN through participation and delivery of key products(scale 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Golok	1			

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	50,000			
Male	50,000			
Total	100000	0	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

1a. Project Description.

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1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description);

The Golok/Kolok River (Thai: Maenam Kolok; Malaysian Language: Sungai Golok) marks the border between Malaysia and Thailand dividing the Malaysian state of Kelantan from the Thai province of Narathiwat. The "Friendship Bridge" connects the Malaysian town of Rantau Panjang and the Thai town of Sungai Kolok. The river, approximately 95 km long, originates in the mountainous area of Waeng District, and flows through Sungai Kolok and Tak Bai Districts draining into the Gulf of Thailand at Tak Bai District, Narathiwat Province. Its' waters are critical in sustaining agricultural and economic activities, and in providing water for drinking and other domestic uses.

In spite of being a small river, the Golok/Kolok River stands out in the region as it defines the international border between two important South East Asian countries: The Kingdom of Thailand and peninsular Malaysia. Transboundary cooperation between the two countries would enable both sides to better promote sustainable basin management and overall environmental security and address common challenges. At the same time, it highlights an important opportunity to establish and consolidate transboundary cooperation as the essential prerequisite to respond to a number of the challenges facing the two riparian countries and the population of the basin; among them: increasing flood risks, accelerated upstream erosion and siltation at the river mouth, growing contamination of both surface and groundwater resources, loss of freshwater ecosystem services.

The Golok/Kolok River is one of the 137 rivers worldwide that define international borders, many of which face various levels of conflict hindering sustainable development, including the Golok/Kolok River. The limited dimensions of the Golok/Kolok River basin provide a rare opportunity to pilot comprehensive and effective transboundary cooperative arrangements - aimed at improving social stability, easing conflicts at the water nexus, preserving ecosystem services - replicable in the region and beyond[1].

Additionally, likewise to what happens in a number of other border defining rivers, the sediment load carried by the Golok/Kolok River has been increasing due to a combination of growing climate variability and change, deforestation, and land use changes in the upstream sections of the basin. This is causing siltation at the river mouth, the shifting of the river course over time. The project would help to assess different hydraulic models that could deliver improved solutions to the problem especially addressing anthropogenic activities that result in excess sediment transport to identify transformational management and/or policy changes that could be beneficial in the region and replicable globally in a number of similar situations.

The lack of a coordinated response to environmental challenges exacerbates the existing economic limitations faced by local business that mostly still employ unsustainable resource management practices. Consequently, communities in the Golok/Kolok River basin remain among the poorest of the two countries. Environmental problems fuel the conflict as both countries adapt in isolation. For instance, river siltation introduced severe livelihood limitations for

fishermen as the river mouth partially closed over years. Similarly, responses to floods were not coordinated which led to investments to increase flood embankments in one country amplifying floods across the border.

Two major issues of transboundary concern require joint remedial action from the two riparian countries:

1. Sediment transport - There is much concern in the region about siltation in the flood plain and at the river mouth and its impacts on fisherfolk and their livelihood. Erosion accelerated in the upper parts of the basin –the result of current production, irrigation and land-clearance practices - is a main source of the siltation at the river mouth. Recent research on sediment loads in peninsular Malaysia showed that the lowest yield was found in Sungai (Sg.) Bidor basin where the forest cover is about 70% and the elevation rises to 1220 m.[2] Some cultivation of rubber and a number of residential units are also found in the 339 km basin. The highest yield was found in Sg. Golok. Here about 90% of the 560 km catchment is under forest with some rubber and padi cultivation. Although the annual runoff for both catchments is about 1900 mm, the specific sediment yields of the two basins differed by a factor of nine. This comparison implies that other controls, such as catchment relief, sediment sources and the impact of human activities in production landscape are important.

Identification of the effects of anthropogenic activities, of geophysical processes and hydrological variables at the catchment scale is necessary. Despite the importance of forest cover in protecting the underlying soil from erosion, forest practices, even on a selective basis, can generate large amounts of sediment especially in steep hill forest catchments. Sediment yields from logged catchments can be up to 50 times greater than from unlogged catchments. Sediment production can therefore increase by about the same proportion if catchments are altered, although this interpretation is limited to a small sample of basins. There is a need for forestry data for the respective catchments to gain a better understanding of catchment scale erosion.

2. Floods and droughts - Water resources of the basin are of the utmost importance for domestic water supply, wider land use planning, natural resource management and investment, irrigation and food security. With abundant annual rainfall (average 2,500 mm/annum), the Golok/Kolok River basin experiences increasing flood risks due to climate change, unorganized land governance and development. Changes in rainfall patterns and trends affect the hydrological cycle dynamics translating into spatial uncertainty in frequency and intensity of rains within the basin, with some areas affected by water shortage, whilst others experience excessive flooding.

National infrastructure investment over the past two decades have aimed to protect specific communities from flood damage, yet have at times exacerbated damage across the border. These alternating investment responses and community outcomes are the cause of substantial local conflict (e.g. the 2009 and 2014/15 floods were mainly directed to the Malaysian side and the 2007, 2013 and 2017 floods mainly affecting Thai communities). Climate change is anticipated to have substantial impacts on the livelihoods of smallholder farmers in both Malaysia and Thailand as shifting rainfall and temperature regimes are expected to reduce crop yields, decrease farmer incomes, and threaten the water and food security of some of the most vulnerable and highly natural resource dependent people in the two countries.

To address these serious flood risks in the basin, and the overall socio-economic development of the region, a major barrier has to be removed: the gap in developing a comprehensive integrated strategy for the protection and management of the Basin's water resources, harmonized across the two country segments. *Strengthening transboundary cooperation is the key to unlock opportunities that would arise from the joint management of the Basin.*

Droughts are another growing concern related to climate change and increasing climate variability. Drought are affecting all agricultural livelihoods in the region and force many communities to increase their groundwater use for irrigation and domestic purposes. The combination or upstream erosion and increasingly frequent and intense droughts is that several sections of the Golok/Kolok River run dry. This has high ecological costs. These concerns are shared by both countries and achieving an effective drought management strategy is seen as highly beneficial for national security goals.

2) The baseline scenario and any associated baseline projects,

River mouth siltation

The Golok/Kolok River has been the object of high-level dialogue and co-operation between the two riparian countries for 40 years. In 1979, the governments signed an agreement on agricultural cooperation. Then, in 1997, the Agreement between the Government of the Kingdom of Thailand and the Government of Malaysia on The Golok River Mouth Improvement Project) was signed by creating the *Joint Steering Committee on the Golok River Basin*. JSC). The JSC has held over fifteen (15) meetings since its establishment to 'coordinate actions and programs to address issues of concern within the basin.' The Golok/Kolok River Basin has also been the object of joint-country studies, focused on measures to address floods, irrigation, improvements to the Golok/Kolok river mouth, etc. Updated joint studies have been recently completed in 2013 on the river mouth. In addition to the JSC's focus on the issues of siltation at the mouth of the river, and the supporting studies on this part of the basin, there is broad recognition of the need to have a better understanding of the issues affecting the integrity of Golok/Kolok River Basin ecosystems and socio-economic activities. As the population expands and demands on the natural resource base increase, it is important to sustain the health of the diverse water dependent ecosystems across the landscapes of the Golok/Kolok River Basin.

With the establishment of Golok River Basin Committee in 1997, there have been a number of joint cooperative projects/programmes between the two countries with the aim of implementing sustainable development programmes beneficial to both countries. One of the programmes is the establishment of a web-based information system whereby both countries are able to access and share hydrological information gathered through a network of hydrological stations currently operational at the respective sub basins.

Flood risk increase

In recent years, flooding has increased in frequency and magnitude. Structural measures to mitigate flood are invariably expensive. River bunds have often been overtopped resulting in severe damage. On the Malaysian side the Department of Irrigation and Drainage Malaysia (DID) maintains a network of hydrological stations that comprise two telemetry stations (rainfall and water level stations). The telemetry station at Kampung Jenob provides a preliminary forecast of flood levels for the downstream station at Rantau Panjang.

The proposal to construct a new cableway gauging station for Golok/Kolok River at Rantau Panjang was forwarded to the Royal Thailand Consulate General in 1999. The gauging station was finally constructed in March 2009. With the establishment of this gauging station, flood peak discharges can be captured by both countries. The data gathered by both countries can be shared as a supplementary data, which then could be used as the basic data and information for the planning, development and management of water resources of the Golok/Kolok River Basin.

Gaps in transboundary flood risk management and erosion control

Notwithstanding the joint efforts made to date by the two countries, important knowledge gaps remain that hinder transboundary water management. They include:

- Water resources planning gap (including irrigation, drainage, industrial and domestic demand)
- Need for information on coastal and inland flooding (including sea surges and from extreme weather events)
- Assessment of community resilience to increasing flood risks and identification of flood mitigation strategies
- Improved hydraulic models for understanding water resources sediment transport
- Improved understanding of sources and impacts of sediment transport within the basin including deposition of sediments at the river mouth
- Improved information on ongoing and planned land-use change within the basin
- Both countries started independently based on their own data the development of whole-of-basin flood models.

Summary of transboundary problems in the Golok/Kolok River Basin

Joint occurrence of coastal and inland flooding

Inland river flooding in Rantau Panjang and coastal floods in downstream areas of Golok/Kolok river mouth.

Lack of Integrated Water Resources Plan (IWRP).

Each country plans water resources for its own needs without sharing and coordinating with the other party.

No integrated flood management plan

Each country manages flood problems independently, often raising levees and worsening downstream flooding situation.

Intra-basin flooding from Kelantan to Golok/Kolok river during extreme floods

Inland land use changes in Thailand and Malaysia

Uncontrolled land development (forest to grassland) may increase surface runoff & high peak discharge over a short period, and decrease groundwater recharge.

Siltation at inner river mouth with the formation of sandbars and shoals

Siltation at river mouth has caused transboundary navigation problems, which affects the conveyance capacity of the river mouth. The Joint Commission provides mechanisms for both countries to coordinate the maintenance of the river mouth.

Limited data sharing hinders flood forecasting and sustainable natural resource management

Water quality issues

Several ecosystem components in the Golok/Kolok River Basin are being affected by increasing land-based and atmospheric pollution, a lack of functioning wastewater treatment, and the emergence of oil-palm and rubber plantations in previously forested areas. The increasing magnitude of floods is exacerbating this problem as many pollutants enter waterways, further deteriorating river health. The main pollutants are Biochemical Oxygen Demand (BOD), Ammoniacal Nitrogen (NH₃-N), Heavy Metals (e.g. lead and cadmium), and Suspended Solids. High BOD is contributed largely by untreated or partially treated sewage from manufacturing and agro-based industries. The main sources of NH₃-N are domestic sewage, livestock farming and other liquid organic waste products, whilst the sources for heavy metals is industrial production and agriculture. Suspended solids are mostly introduced by earthworks and land clearing activities.

The decline of water quality affects a wide range of species. Increasingly, omnivorous fish are being detected with elevated concentrations of Cadmium, whereas carnivorous fish show the highest concentration of lead, often surpassing WHO limits. Freshwater mussels, one of the most threatened freshwater taxa globally, are among the most affected, which diminishes their important ecosystem functions, amplifies water quality problems, and deteriorates local food security. NBS could provide effective conservation mechanisms, for instance by establishing riparian buffers and improving wastewater treatment for rivers running through agricultural and residential land.

Coastal fisheries

Fisheries is a main occupation in the communities of the lower Golok/Kolok River basin. However, fish stocks continue to decline due to catchment related developments (e.g. loss of flood plains, deteriorating water quality) and partly due to developments in the South China Sea (e.g. over fishing, loss of habitat.). Recent water management infrastructure introduces additional pressure on already declining fish stocks as the construction of breakwaters and river embankments replace natural habitat of fish species or supporting ecosystems. While not the specific focus of the work, this project will create an important transboundary platform which will be able to raise and potentially address these important basin/livelihood issues.

Institutional and water governance aspects

Water management in the Golok/Kolok River is mainly governed by the legislation both countries have in place. No transboundary agreements on water management exist apart from the joint project on the siltation of the river mouth.

Thailand

Thailand's most relevant legislation concerning the management, use, and access of water is the recently enacted National Water Resources Act (B.E.2561, 2018), which establishes the new Office of National Water Resources (ONWR) as the cross-ministerial coordination agency for water management issues.

Additional legislation relevant to Golok/Kolok River Basin water management and which the project will inform and further strengthen includes:

- The Constitution of The Kingdom of Thailand, April 6, B.E.2560(2017);
- Cabinet resolution of the National Environment Board on the determination of watershed class quality in the southern region and recommendations on land use measures in the watershed on 7 November 1989;
- Cabinet resolution of the National Environment Board on the operational guidelines in accordance with the suggestions for land use measures in the Southern Basin, 6 August 1991;
- The Navigation in the Thai Water Act, B.E.2456 (1913) and its amendments (the latest No.17, B.E.2560);
- The Field Dykes and Ditches Act, B.E.2505 (1962);
- The Groundwater Act, B.E.2520 (1977), its amendments (latest No.3, B.E.2546) and subsequent Ministerial Regulations;
- The Conservation of Canals Act, B.E.2445 (1902) and its amendment No.2, B.E.2483;
- The Royal Proclamation on the Establishment of Public Water Supplies B.E.2452(1909);
- Emergency Decree on Fisheries, B.E.2558(2015);
- Act Governing the Right to Fish in Thai Fishery Areas, B.E.2482 (1939) and its amendments (the latest No.2, B.E. 2539);
- The Public Health Act, B.E.2535 and its amendments (the latest No.3, B.E.2560);
- The Act Governing the Enhancement and Conservation of National Environmental Quality Act, B.E.2535 and its amendments (No. 2, B.E. 2561 (2018)) and the subsequent Ministerial Regulations/Notifications;

Thailand's constitution defines that the conservation, maintenance and utilisation of natural resources (incl water) lie with the state. Water resources are deemed to be state property and landowners are "not entitled to draw more water than is necessary to fulfil his reasonable need to the prejudice of any other piece of land along the waterway" (Article 1355 in Civil and Commercial Act). Irrigation and other large-scale use that might affect individuals or communities downstream require a permit from the district office (based on the people's Irrigation Act). The Royal Irrigation Department holds the mandate to invest in and maintain existing public irrigation infrastructure. EGAT is responsible for investments in energy related water uses, including hydropower.

This project aims to strengthen the regulatory framework for water management by facilitating an evidence-based discussion between the various line Ministries in the context of improved flood mitigation and erosion management. This will continue the cross-sectoral coordination improvements provided by the National Water Resources Act, which defines the mandate of ONWR.

In regards to forest management, which is typically regarded as an important driver for floods and erosion, Thailand has enacted five main policies:

- the first Forest Protection Act (1913), which regulates the long-term forest exploitation benefiting the State;
- the National Parks Act (1961) for protected forest areas;
- the forest protection policy (1970s), which aims at achieving 40 percent forest cover
- the first National Forest Policy (1983), which aims at dividing the 40 percent land cover into 25 percent under economic or production forest, and 15 percent under conservation forest, which involved later in 1989 a ban on commercial timber production;
- the Forestry Master Plan (2003), which aims to restore degraded forests, encourage the establishment of forest plantations, and support community forest management based on the Community Forestry Act (1992).

Climate change is another key driver for flood risks and erosions. Thailand has ratified the Paris Agreement under the UNFCCC and committed to reduce greenhouse gas emissions by 20–25% by 2030. This goal will be supported by a new bill, which is currently being prepared.

Malaysia

Malaysia's water management is regulated by a range of legislation, which define different regulatory frameworks for its different regions (Source: WEPA – Water Environment Partnership Asia). The coordination agency for water management is the Department of Water Resources and Hydrology (DID) at the Ministry of Environment and Water (MEWA). The National Water Resource Policy (2012) is paramount to Malaysia's water planning and governance. It outlines 18 targets in the fields of water resource security and water resource sustainability:

- Target 1: Development of a comprehensive water resource information system
- Target 2: Strengthening database framework
- Target 3: Standardise multiple scientific processes and methods related to evaluation and analysis of state, status and condition of water resources.
- Target 4: Set national standards to determine thresholds for water resources to protect the availability and integrity of waterbodies.
- Target 5: Reduce Vulnerability of water resources to impacts and threats as well as strengthen adaptability to ecosystems and physical changes
- Target 6: Develop water resource conservation plans for strategic, sensitive and critical water resource areas and bodies.
- Target 7: Optimise options for alternative, conjunctive or continuous use of different water resource types to reduce stress on existing sources.
- Target 8: Adopt a national disaster risk reduction preparedness and response plan for water resources to introduce measures for preparedness and response, as well as reduction of risks and threats of disasters from and to water resources.
- Target 9: Adopt national criteria for water resources characterisation and standards.
- Target 10: Determine Priority for water resource use, particularly in times of crisis or threat.
- Target 11: Protect condition and state of water resources, catchment and bodies.
- Target 12: Adopt economic measures to value water resources.
- Target 13: Adopt measures to determine optimum water quality and yield.

- Target 14: Adopt measures to implement water demand management nationwide.
- Target 15: Establishment of mechanisms for formal and informal consultation on matters related to water resources.
- Target 16: Develop framework for stakeholder collaboration in water resource governance.
- Target 17: Build capacity of key water resources stakeholders.
- Target 18: Improve understanding and awareness of the importance of water resources security and sustainability.

This project supports the implementation of targets 5, 8, 11, and 18 by improving transboundary and cross-sector coordination for the Golok River basin. The evidence-based process will link Malaysia's investments in the Golok River basin to Thailand's basin planning and thereby establish a transboundary basin management process for the target basin. In parallel, it will strengthen the cross-sectoral coordination for water management in the basin, by mainstreaming flood mitigation and erosion control. The combination of cross-sector and transboundary coordination will improve the resilience of communities in the Golok River basin to floods and erosion.

Malaysia is a federation of states, which makes it critical to stress that natural resources are under the mandate of States, in the case of the Golok/Kolok River Basin the State of Kelantan. This means that the State Departments responsible for, inter alia, water management, disaster prevention and mitigation, forest management, conservation, and agriculture will be critical stakeholders for the execution of this project.

In regards to forest management, each State has the power to create its own individual forestry rules. However, there are two key forest policies in Malaysia:

- the National Forestry Policy (1978) and its various amendments (1992) aim to conserve and manage the nation's forest based on the principles of sustainable management, to protect the environment, to conserve biological diversity, genetic resources and to enhance research and education. The amendments aimed also at the improved protection of indigenous land and forest titles.
- the National Forestry Act (1984), which regulates the administration, management and conservation of forests and forestry development within the States of Malaysia, and its amendment (2019), which improves the enforcement against illegal taking of forest produce.

Kelantan State has several forest conservation strategies in place.

Climate changes is another critical driver for flood risks and erosion and Malaysia is currently developing a legal framework for climate change, which will guide and support the implementations of Malaysia's commitments under the UNFCCC. Meanwhile, climate change has been an important part of Malaysia's five-year plans, which includes legal targets such as

- 2 million people protected through flood mitigation projects by 2020 against a 2016 baseline;
- 17% terrestrial and inland water areas gazetted as protected areas by 2020;
- 10% coastal and marine areas gazetted as protected areas by 2020 against a 2016 baseline; and
- Up to 40% reduction in GHG emissions compared to 2005 levels by 2020 compared with a 2016 baseline.

As a signatory to the Paris Agreement, Malaysia has committed to a reduction of greenhouse gases by 45% by 2030.

3) The proposed alternative scenario with a brief description of expected outcomes and components of the project;

The attention of governments has been so far mostly focused on short term, end of the pipe interventions to maintain the river mouth open and prevent shifting of the Golok/Kolok River mouth, raising levees to prevent flooding, and improve hydrological information. They now recognize the need for embracing a more long-term view and address the root causes of the problems – climate change, deforestation, and land use changes – affecting the basin’s water resources and related ecosystem services, and the sustainability of the livelihoods of the basin population in the flood plain and delta. Both countries are now ready to consolidate existing cooperation frameworks, and invest in long term sustainable solutions.

The proposed GEF project aims at assisting Thailand and Malaysia in this important undertaking, fostering the introduction of effective transboundary cooperation arrangements and basin management policies and practices. Figure 1 shows the principle project logic and outlines the theory of change.

Component 1 will establish the jointly agreed evidence base, which will be major input for the design and site selection of pilot projects and the drafting of the SAP. This component will be focused on the assessment of to mitigate flood risks, upstream erosion risks, siltation at the river mouth, contamination of surface and groundwater, and loss of freshwater ecosystem services. Livelihood factor and other socio-economic issues will be included in the assessment to provide an integrated analysis. Ultimately, policy and management recommendation will be derived and presented to the SAP process.

Component 2 will start in parallel and put in place the main prerequisites the Strategic Action Programming requires, including the development of a vision and the strengthening of a commission to cover basin-wide issues.

Component 3 will start with the identification and design of possible initiatives, with a strong emphasis on nature-based solutions considering the S2S approach and conjunctive surface and groundwater management (see below). The final selection and prioritisation of pilots and the selection of sites will be based on TDA results. If successful, the component will also develop cost-effective upscaling strategies.

Component 4 will develop a Strategic Action Program for the transboundary management of the Golok/Kolok River basin. This process will build on outputs provided by Components 1, 2, and 3, and lead into priority reforms both countries will consider for national implementation. All components will be supported by activities in Component 5. Component 6 will ensure active communication with baseline projects and the IW LEARN network by presenting project findings and elicit findings from other initiatives potentially beneficial for the Golok/Kolok River basin. These updates will inform Components 1, 2, 3, and 4.

The ultimate achievements will lead after a successful project accomplishment to a sustainable management structure for transboundary cooperation, the translation of regional SAP into national action plans, and the successful raising of funds for implementation of the SAP. This will establish increasing transboundary cooperation and high-level dialogue and its co-benefit of reducing tension about the current shifting boundary at the river mouth. In the long term these actions will lead to improved environmental security, including mitigated flood risks, reduced upstream erosion, halted or reversed siltation at the river mouth, reversed contamination of surface and groundwater, and reversed loss of freshwater ecosystem services. The project activities will directly benefit around 100,000 people while improving long-term environmental security for the majority of the basin population (>1.1m).

Long-term goal: Enhanced environmental security

Mid-term goals:

- Ongoing improved transboundary cooperation in the Golok/Kolok River basin
- SAP implemented in national action plans
- SAP funded by international donors, private sector, and other stakeholders

Component 1: TDA

Assessment of

- Flood risks
- Drought risks
- Erosion and siltation risks
- Livelihood risks
- Water quality degradation risks
- Ecosystem service degradation risks
- Water and gender

Evidence base for selecting pilots and their location

Component 3: Pilots

Design and execution of demonstration projects on nature based and other solutions to mitigate flood risks, upstream erosion, siltation at the river mouth, contamination of surface and groundwater, and loss of freshwater ecosystem services.

Evidence base for drafting SAP

Component 2: SAP1

SAP prerequisites:

- Shared vision
- Joint Commission
- Agreement on transboundary issues
- Draft flood mitigation and erosion control plans
- Draft transboundary data management

Requirements

Component 4: SAP2

SAP development:

- Strategic Actions program with key priority reforms endorsed by both countries at minister level
- Partnership conference held to present SAP to international donors, the private sectors and other relevant stakeholders

Test results for drafting and finalising SAP

Component 5: Cross-cutting themes

Monitoring --- Stakeholder participation --- Gender mainstreaming

Component 6: Cross-project synergies

IW LEARN --- Baseline projects

Figure 1: Project logic

The limited dimensions of the Golok/Kolok River basin provide a rare opportunity to pilot comprehensive and effective transboundary cooperative arrangements – aimed at improving social stability, easing conflicts at the water nexus, preserving ecosystem services – replicable in the region and beyond[3]. The scope of the work includes the introduction of conjunctive management of surface and groundwater in the Golok/Kolok River basin, the design and testing of nature-based solutions for improved water management, flood mitigation, aquifer recharge, erosion control, buffer zones, flood expansion areas, and will adopt a systematic source-to-sea approach that accounts for impacts of upstream activities on coastal and marine resources. Within this scope, the project will focus on climate change, deforestation, land use changes. Climatic hazards are already impacting crop yields and flood risks throughout the Golok/Kolok basin. Land use change and deforestation are being recognised as a potentially driver for erosion, which drives the siltation of the river mouth. The proposed project is aiming to influence existing infrastructure investment plans and will build on the GEF-funded project “*Development of tools to incorporate impacts of climatic variability and change, in particular floods and droughts, into basin planning processes*” (https://www.thegef.org/sites/default/files/project_documents/02-3-14_Project_Document_PAD_1.pdf). Further, the project aims to influence land use planning in the Golok/Kolok River basin to mitigate erosion and halt or reverse siltation processes.

The project will address drought as part of the TDA, which will provide essential details on where and how often agricultural and hydrological drought have occurred in the past. The TDA will also analyse drivers (root causes) to identify effective intervention points. Some of these will already be addressed as part of the demonstration projects by testing nature-based solutions for effective drought management responses and, more importantly, to avoid the drying up of river sections in the first place. The SAP will define actions based on the TDA-derived evidence and the experiences made in the pilot projects.

The shift towards NBS will mainly target flood/drought resilience and erosion. However, due to the social-ecological connectivity it will also contribute to the improvement of coastal fisheries by protecting existing and providing new habitat in the basin. It will also contribute to water quality improvements as flood peaks will decline and wetland area will increase. The design of NBS will provide critical positive interventions in ecosystem functioning and replace plans for interventions that further deteriorate ecosystems in the Golok/Kolok River basin.

Conjunctive surface and groundwater management, intended as the efficient utilization of all freshwater resources existing in the Golok/Kolok basin – surface waters, groundwater shallow and deep, but also rainfall, treated wastewaters and other non- conventional sources – according to an overall strategy aimed at improving water availability and reliability for all stakeholders in the Golok/Kolok basin. It is crucial for integrated water resources management and helpful to reduce vulnerabilities of water supply systems and mitigate the water supply stress in responding to climate change, which in the Golok/Kolok River basin is driven by the sharply increasing climate variability. Conjunctive management means using resources in harmony to maximize and stabilize long-term supplies for communities in the Golok/Kolok basin. It does not mean maximizing the use of two separate but interrelated resources for unsustainable short-term gains. Conjunctive management includes two main practices: (i) integrating surface water diversions and groundwater withdrawals to maximize efficiency and minimize impacts on other resource users and ecological processes; (ii) capturing surplus or unused surface water and injecting or infiltrating that water into groundwater aquifers in order to increase recharge rates (Managed Aquifer Recharge for flood risk management). For the Golok/Kolok context these two main practices would mean to identify locations for aquifer recharge to reduce floods and to assess safe groundwater extraction potential for droughts while considering groundwater dependent ecosystems, including the Hala Bala Bird Sanctuary (Thailand) and the Danau Tok Uban Lake (Malaysia). It will also include the assessment of options to use existing infrastructure for conjunctive surface and groundwater management, including the Bukit Kwong dam (Malaysia) and the various plantations that use pumps for irrigation.

Nature-based solutions (NBS), that is lower cost practices and technologies inspired and supported by nature that use, or mimic, natural processes to contribute to the improved management of water. An NBS can involve conserving or rehabilitating natural ecosystems and/or the enhancement or creation of natural processes in modified or artificial ecosystems. They can be applied at micro- (e.g. a dry toilet) or macro- (e.g. landscape) scales. In the case of the

Golok, NBS is likely to include the enhancement of the sediment retention capacity of flood plains, the restoration of riverbank buffer zones, the protection of flood expansion areas, and the improvement of aquifer recharge with excess floodwaters. Current investment planning in the Golok/Kolok is dominated by engineering focused solutions. However, sustainable water security will not be achieved through business-as-usual approaches. NBS work with nature instead of against it, and thereby provide an essential means to move beyond business-as-usual to escalate social, economic and hydrological efficiency gains in water resources management. NBS show particular promise in achieving progress towards sustainable food production, improved human settlements, access to water supply and sanitation services, and water-related disaster risk reduction, which are particularly relevant for the Golok/Kolok basin. They can also help to respond to the impacts of climate change in form of increasing climate variability on water resources in the Golok/Kolok basin. NBS support a circular economy that is restorative and regenerative by design and promotes greater resource productivity aiming to reduce waste and avoid pollution, including through reuse and recycling. NBS also support the concepts of green growth or the green economy, which promote sustainable natural resource use and harness natural processes to underpin economies. The application of NBS for water also generates social, economic and environmental co-benefits, including improved human health and livelihoods, sustainable economic growth, decent jobs, ecosystem rehabilitation and maintenance, and protecting/enhancing biodiversity. The value of some of these co-benefits can be substantial and tip investment decisions in favour of NBS.

Source to Sea (S2S) approach: Generically speaking, an S2S system includes the land area that is drained by a river system or systems, its lakes and tributaries (the river basin), connected aquifers and downstream recipients including deltas and estuaries, coastlines and near-shore waters, the adjoining sea and continental shelf as well as the open ocean. Water, sediment, pollutants, biota, materials, and ecosystem services key flows connect the sub-systems in the source-to- sea continuum and their geographies. An S2S approach consolidates analysis, planning, policy-making, and decision-making across sectors and scales. It considers the entire social, ecological, and economic system, from the land area that is drained by a river system to the coastal area and even the open ocean it flows into (GEF STAP Policy paper 2016). An S2S approach understands the basin as a connected system and identifies for each emerging challenge (e.g. erosion) responsible drivers (e.g. deforestation) and intervention options (e.g. improved land use planning, reforestation). The FAO approach to S2S seeks to prioritize key flows, and enhance/restore positive flows (e.g. biodiversity, ecosystem services and high-quality water) and reduce negative flows (e.g. pollution, sediments) across landscapes/seascapes. In the context of flood and drought (risk) management in the Golok/Kolok River basin the S2S approach means to take a whole-of-basin perspective when identifying, assessing, and managing relevant drivers, incl. deforestation, land use change, agricultural management, or irrigation. The TDA will consider S2S connectivity and assess land cover changes, land management, irrigation demand, and other relevant upstream issues and determine how flood and drought risks have changed over time. The SAP will apply the S2S approach to the development of strategic actions. For the Golok/Kolok it will also mean to depart from a narrow management of the river mouth and rather look into erosion and siltation processes, including sediment re-suspension processes, across the basin, including all tributaries. Such an S2S approach could for instance identify land cover changes and land management issues in upstream sections as key drivers of the river mouth siltation and developing response strategies accordingly. For the Golok/Kolok River basin it will also mean to assess livelihoods and other socio-economic aspects to determine drought and flood risks as well as relevant socio-economic drivers of aforementioned risks.

The project framework

COMPONENT 1: Establishing a jointly accepted evidence base for joint flood management and erosion control

Outcome 1: Consensus among countries sharing the Basin, and all stakeholders and water users – *including de minimis* [4] - on the present and likely future threats that impact the sustainability of the shared freshwater resources and dependent ecosystems.

Outputs of Component 1:

- Transboundary Diagnostic Analysis (TDA) defining biophysical and socio-economic baseline conditions of the Basin freshwater resources and dependent ecosystems, and identifying the main transboundary issues of concern with focus on erosion and floods.
- Joint detailed basin-wide survey of issues affecting erosion and siltation of the Golok/Kolok River mouth.
- Assessment of impacts of planned infrastructure and land use plans on flood risks, growing contamination of surface and groundwater resources, and loss of freshwater ecosystem services.
- Water, pollution and land use management options and opportunities identified to reduce flood risks, mitigate erosion, growing contamination of surface and groundwater resources, and loss of freshwater ecosystem services.
- Water and Gender analysis at the basin level, including collection of sex disaggregated data.
- National level training for data collection, analysis, assessment and management to support TDA.

Component 1 will establish the jointly agreed evidence based in form of the Transboundary Diagnostic Analysis (TDA), which is an essential part of the GEF's TDA-SAP methodology. The TDA will take a whole of basin perspective to assess flood and drought risks, erosion and siltation, and water pollution, and the respective underpinning drivers. The TDA will be realised as a participatory process and will involve local and national civil society groups, academia, relevant cross-sectoral government agencies in the basin, and private sector entities. As shown in Figure 1, the TDA process will not only provide a series of sector assessments for the transboundary context of the Golok/Kolok River as evidence for the SAP process. The TDA component will also synthesise findings in form of policy recommendations (e.g. investments in NBS, build infrastructure, or managerial changes) to inform the SAP process as well as the design and selection of pilots in Component 3.

COMPONENT 2: Strengthening cooperation mechanisms for transboundary flood and control and erosion management

Outcome 2: Agreement on a Basin long-term Vision and on common environmental quality targets.

Outputs of Component 2:

- Strengthened mandate and institutional capacity of the Joint Golok/Kolok River Basin Commission and long-term EQ targets.
- Agreement on the management of factors contributing to the shifting of the national boundary in place.
- Jointly designed flood mitigation plans.
- Developing detailed specifications for regional data management system to support freshwater management in the Basin.
- Shared Vision for the transboundary basin agreed upon by the Joint Commission.

Component 2 will be focused on establishing and improving the key elements essential for a successful SAP process, including the strengthening of the existing Commission, the coordination of water management related planning, and a shared vision. These outputs will support the activities towards the strategic action programming of Component 4.

COMPONENT 3: Piloting nature-based solutions for improved transboundary flood and sediment management.

Outcome 3: Small-scale pilot interventions inform the key actions needed to address transboundary problems.

Outputs of Component 3:

- Pilot activities addressing priority problems identified by the TDA defined and implemented. Examples of activities that countries have already identified as potentially needed include:
 - Nature-based solutions to reduce erosion and flood risks
 - Reducing soil erosion in the upper catchment
 - Practical means to divert sediment deposition in the river mouth
 - Studies to understand water demand (agriculture, industry, domestic, de minimis)
- Identification of sustainable financing to replicate/upscale successful pilot actions.

Component 3 will be focused on the design and execution of pilot projects to test identified water, pollution and land use management options and opportunities. The early steps will be in parallel and in close collaboration with Component 1 to allow pilots to be based on TDA results. Pilot projects will be monitored to inform the SAP process by contributing to the selection of strategic actions that effectively reduce flood and drought risks, reduce erosion dynamics, and improve water quality in the Golok/Kolok River basin.

COMPONENT 4: Defining actions for joint implementation

Outcome 4: Agreement reached on joining forces and financial resources for reversing degradation trends in the basin.

Outputs of Component 4:

- A Strategic Action Program (SAP) listing key priority reforms and investments that the countries are willing to undertake in the short-term to increase environmental security in the Basin, agreed upon and submitted for endorsement at ministerial level by the two countries.
- The development of an outline and prioritization of medium to long-term actions to increase environmental security in the Basin, agreed upon and submitted for endorsement by the two countries
- A Partnership Conference held to present the SAP to international donors and IFIs, the private sector, relevant Convention Secretariats, and ensure financial and political support to SAP implementation.

Component 4 will be focused on the development of strategic actions that effectively mitigate flood and drought risks, reduce erosion, and improve water quality in the Golok/Kolok River basin. The SAP will build on the jointly endorsed evidence base established in Component 1 and the essential institutional factors provided by Component 2. The SAP will start with a draft list of recommended actions derived during the TDA process. Selected actions will be tested as pilots, which will provide ongoing updates into the SAP process. Both countries will during this process negotiate and prioritize a final SAP, which will then be presented to national agencies and to the international donor community for funding. The SAP will be translated into national action plans (NAPs) in form of revised sector (investment) plans.

COMPONENT 5: Cross cutting themes – Monitoring, stakeholder participation, and gender mainstreaming.

Outcome 5: Monitoring, evaluation and dissemination of the project's progress to impacts reinforce stakeholders' capacity to participate effectively in the sustainable management of the Golok/Kolok River Basin water resources.

Outputs of Component 5:

- Annual Stocktaking Meetings with the participation of all stakeholders, civil society, the private sector, ongoing complementary projects, and the national and regional media.
- Gender mainstreaming in all activities throughout project implementation including capacity building on gender assessment.
- Information management and stakeholder involvement and communication strategies.

Component 5 will be focused on two cross-cutting themes. First, stakeholder engagement, which will involve annual stocktaking meetings to which all relevant stakeholders will be invited. This includes also a robust communications strategy working towards effective information management and vigorous stakeholder management. Second, the mainstreaming of gender across all project components. The gender focused activity will also involve capacity building to strengthen the incorporation of gender issues by all stakeholders involved in the project.

COMPONENT 6: Realising cross-project synergies.

Outcome 6: Coordination mechanisms with ongoing relevant projects and plans, at the national, regional and global levels, encourages synergies while avoiding duplication of efforts.

Outputs of Component 6:

- Full participation to IW LEARN activities, and establishment of Website.
- Participation to GEF IW Conferences.
- Coordination with relevant initiatives in the region and countries and relevant initiatives to freshwater issues.

Component 6 will coordinate communication activities with other projects. This will be realized through GEF's IW LEARN platform and with other baseline projects in the Golok/Kolok basin.

4) Alignment with GEF focal area and/or Impact Program strategies;

The project is fully in line with the International Waters Programming Directions for GEF 7, Objective 3: Enhance water security in freshwater ecosystems.

The GEF7 IW Strategy states that "... IW support in freshwater basins will focus on three areas of strategic action: 1) advance information exchange and early warning; 2) enhance regional and national cooperation on shared freshwater surface and groundwater basins; and, 3) invest in water, food, energy and environmental security". All three areas are covered in the proposed project.

Moreover, the project adopts the Source to Sea approach promoted by the GEF STAP, and focuses on an area indicated by TWAP as a likely future hotspot for "... nexus dimensions aggravated by increasing severity of floods intensified by increasing climate variability and change (e.g. rising sea levels), population growth, urbanization and associated increasing needs for food and energy. Cooperation on water is an imperative in these regions to support the need for water, food, energy, and ecosystems security and related dimensions for each nation".

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing;

Both countries allocated substantial investments to implement their water management related plans in the Golok/Kolok River basin. The Thai Government has budgeted for the next five years a total of \$97m towards flood risk mitigation, the maintenance of drainage and irrigation systems, and the safeguarding of navigation in the Kolok River. Similarly, the Malaysian Government pledged \$90m over the next five years towards flood risk management, improved irrigation efficiency, and navigation in the Golok/Kolok River. The majority of both countries' investments are targeting the construction or maintenance of hard infrastructure.

GEF IW investment will influence the design and implementation of these large-scale interventions by (a) adding the transboundary assessment perspective and (b) complement ongoing national planning with joint planning processes. This will mitigate the risk of previously experienced transboundary impacts, for instance in form of amplifying the impact of floods on communities across the border. The joint design and the joint funding of flood mitigation interventions is likely to establish new holistic solutions that consider whole-of basin dynamics. This will establish a fundamental prerequisite for improving the resilience of communities in the basin and the sustainability of ecosystems. Furthermore, it will contribute to peacebuilding in the border area between these two important Asian countries.

6) Global environmental benefits (GEFTF)

In spite of being a small river, the Golok/Kolok River stands out in the region as it defines the international border between two important South East Asian countries: The Kingdom of Thailand and peninsular Malaysia. Transboundary cooperation between the two countries would enable both sides to better promote sustainable basin management and overall environmental security and address common challenges. At the same time, it highlights an important opportunity to establish and consolidate transboundary cooperation as the essential prerequisite to respond to a number of the challenges facing the two riparian countries and the population of the basin; among them: increasing flood risks, accelerated upstream erosion and siltation at the river mouth, growing contamination of both surface and groundwater resources, reduced groundwater recharge, and loss of freshwater ecosystem services.

The proposed project, adopting the TDA-SAP approach, is aimed at enhancing environmental security and transboundary cooperation in the Golok/Kolok river basin. It will directly contribute to the IW GEF-7 Core Indicator and sub-indicators^[5], and accrue global benefits as defined for the International Waters focal area, and clear local benefits for the two countries and the local population of the basin.

In addition, the Golok/Kolok River Basin presents one aspects of global relevance, which deserves consideration.

The Golok/Kolok River is one of the 137 rivers worldwide that define international borders, many of which face various levels of conflict hindering sustainable development, including the Golok/Kolok River. Additionally, likewise to what happens in a number of other border defining rivers, the sediment load carried by the Golok/Kolok River has been increasing due to a combination of growing climate variability and change, deforestation, and land use changes in the upstream sections of the basin. This is causing siltation in the downstream parts of the river, and the shifting of the river course over time and, consequently.

7) Innovation, sustainability and potential for scaling up.

The project aims to develop a common understanding of the transboundary problems, future threats, and impacts to the ecosystem and relevant ecosystem services within the Golok/Kolok River Basin to identify the immediate, underlying and root causes of these problems. This will lead to a transboundary action plan (SAP) to support the sustainable development of the Golok/Kolok River basin, the improved resilience of communities to floods in the basin, the improved

erosion management, the improvement of ecosystems through the implementation of NBS (e.g. riverine buffer zones, improved wetlands, aquifer recharge zones), and an overall improvement of gender equity by influencing basin planning processes to empower women.

A key initial focus of the project will be on the two most conflict-laden topics, the erosion/siltation driven the shifting of the Golok/Kolok River mouth and the coordination of flood mitigation investments.

In regards to the dynamic river morphology and the problem of sediment deposition, the project will help to assess different hydraulic models that could deliver improved solutions to the problem especially addressing anthropogenic activities that result in excess sediment transport to identify management and/or policy changes that could be beneficial. This process will be put into the context of a basin wide assessment and involve in particular land use change. Ultimately, this evidence-based process will develop more holistic and sustainable solutions to the shifting river challenge than solutions that focus solely on the river mouth.

In regards to the flood risks the project will aim to develop joint mitigation strategies and subsequent infrastructure investments, prioritizing investments in nature-based solutions (and fully utilizing new regional knowledge generation on nature-based solutions for agriculture being led by FAO). This transboundary cooperation will also be supported by basin wide assessments of land use change, livelihoods, and other biophysical and socio-economic drivers that influence flood risks and flood exposure.

Both focal themes will introduce innovative management solutions to mitigate enduring causes of transboundary conflict and, thereby, contribute to improved peacebuilding through integrated water resource management.

[1] The project would also draw lessons and experiences from a previous quite similar GEF IW project targeting the Rio San Juan, which marks the border between Costa Rica and Nicaragua.

[2] *Lai, F.S., et al.* (1996). Sediment yields from selected catchments in Peninsular Malaysia. In: *Erosion and Sediment Yield: Global and Regional Perspectives* (Proceedings of the Exeter Symposium, July 1996). IAHS Publ. no. 236, 1996. 223-231.

[3] The project would also draw lessons and experiences from a previous quite similar GEF IW project targeting the Rio San Juan, which marks the border between Costa Rica and Nicaragua.

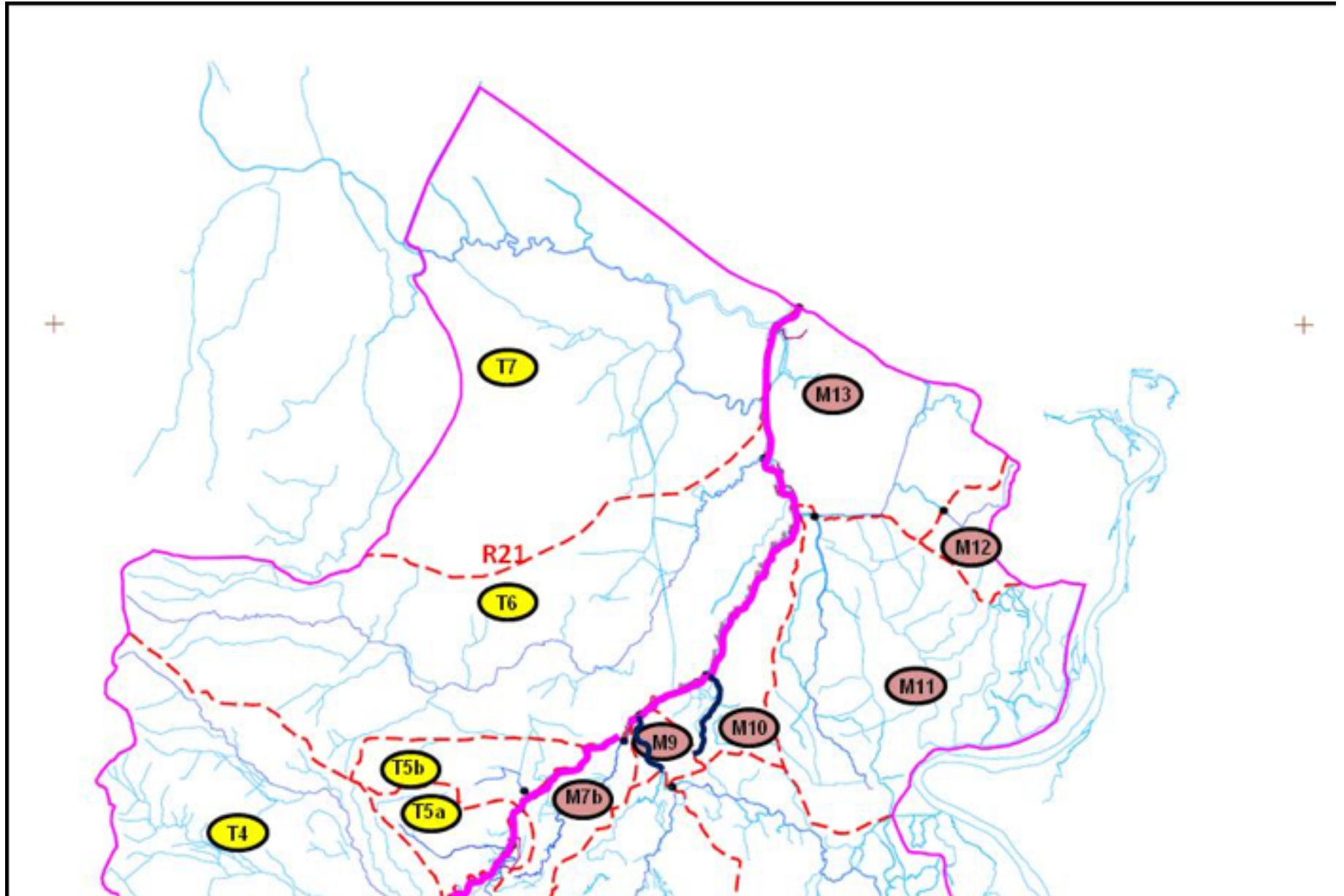
[4] The vast majority of users that typically benefit from *de minimis* rights to abstract and use small quantities of water. Consensus is defined as a general agreement between the key stakeholders in both countries.

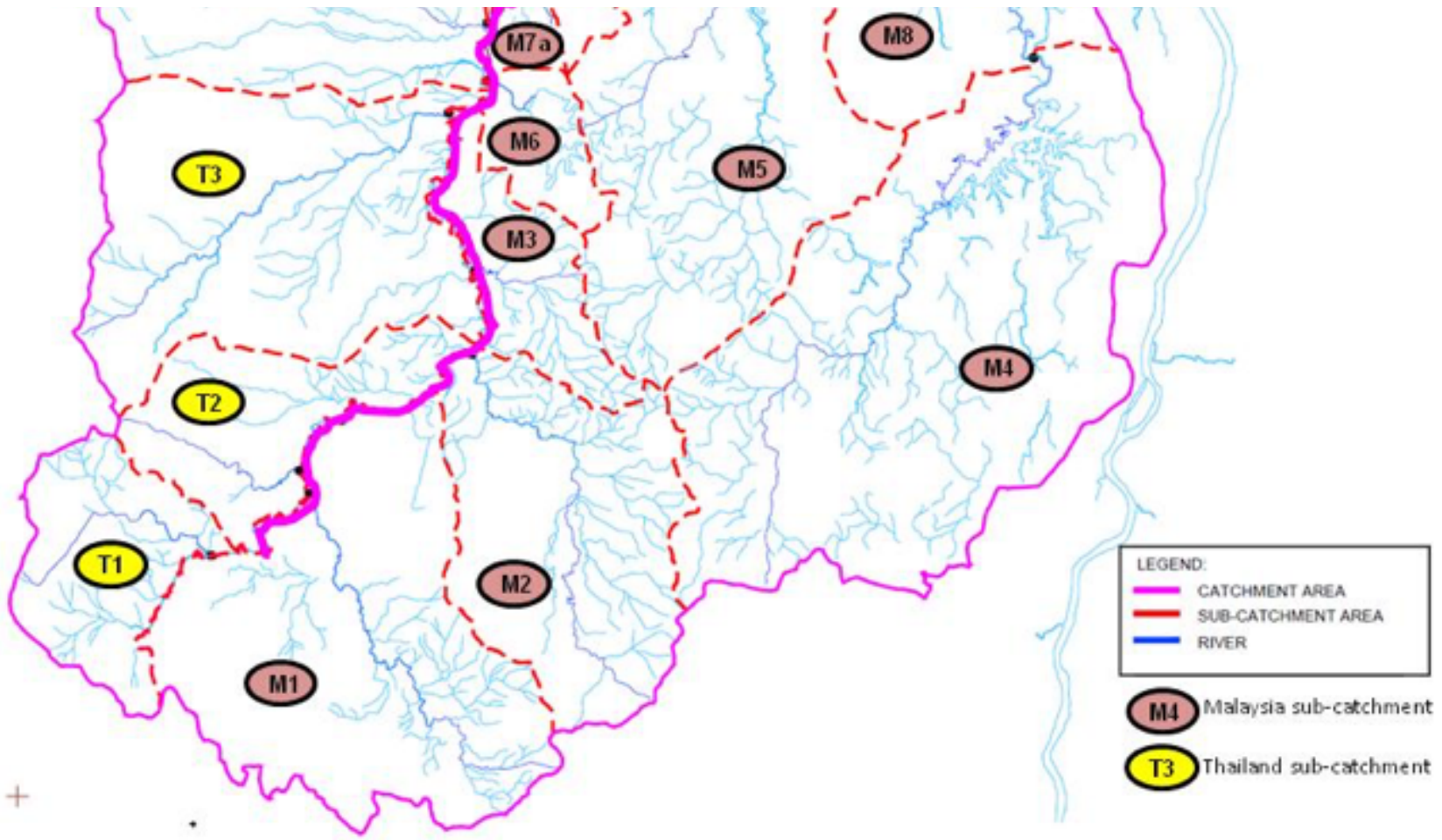
[5] Indicator 7 – Number of shared water ecosystems under new or improved co-operative management

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

Disclaimer: This project is without prejudice to Thailand's or Malaysia's rights with regard to the land boundary under international law.





2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities

Civil Society Organizations

Private Sector Entities

If none of the above, please explain why: Yes

The transboundary process is currently organized through a joint committee, which created an entry point for designing this project. The consultations also included local governments. The table in the following section of the portal lists in the gray shaded cells the stakeholders that have been engaged with for the design of the PIF. In Thailand the lead government agency is ONWR and in Malaysia DID. In Thailand a series of six workshops have been held in 2018-2020 to draft and refine the contents of the PIF and ensure that all relevant government agencies are on board. In Malaysia a series of meetings have been held with DID and other MEWA departments in 2018-2019 to ensure the Malaysia's contributions have been integrated and that all government agencies at central and provincial level are aware and supportive of the proposed initiative. A bilateral workshop was organized on 2 December 2019 bringing together key stakeholders from Malaysia and Thailand. The workshop was hosted by FAO in Bangkok. So far, non-governmental organizations or private sector actors have not been included.

The proposed project will employ a highly participatory process, bringing both countries together in a series of transboundary workshops. All workshops are planned in the target basin and will include local governments and community representatives. Pilots will also be co-designed and co-implemented with local communities and relevant CSOs. While the table in the following section of the portal lists the most relevant stakeholders for the PPG phase and for the project execution, stakeholder engagement details will be developed during the project preparation phase. Additional actors for project execution at local levels will be identified during the PPG phase.

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

Stakeholders

Institution/Organization	Description	Engagement
Golok/Kolok River Basin Commission	Bilateral entity to coordinate water management in the Golok/Kolok River basin, so far focussed on the siltation of the river mouth.	Primary stakeholder for project activities and will be key entity for SAP process.
Office of the National Water Resources (ONWR), Office of the Prime Minister	Government agency with the main mandate for water management in Thailand	

Office of the Prime Minister, Thailand (OPM)	Thailand	Primary stakeholders and project executing agencies.
Department of Water Resources and Hydrology (DID) at the Ministry of Environment and Water (MEWA), Malaysia	Government agency with the main mandate for water management in Malaysia	(Both agencies are key members of the Joint Committee for the Golok/Kolok River.)
Royal Irrigation Department (RID), Ministry of Agriculture and Cooperatives (MOAC), Thailand	Government agency responsible for maintaining existing and establishing new irrigation infrastructure.	Will provide technical expertise to the project final design and during project implementation, taking the lead on particular project activities.
Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior (MOI), Thailand	Government agency responsible for developing policies, plans and guidelines for disaster risk management and disaster management.	
Department of Agriculture (DOA), Ministry of Agriculture and Cooperatives, Thailand	Government agency responsible for crop choice, and farm mechanization.	
Department of Fisheries (DOF), Ministry of Agriculture and Cooperatives, Thailand	Government agency with the mandate to develop policies and plans for fisheries.	
Department of Marine and Coastal Resources (DMCR), Ministry of Natural Resources and Environment, Thailand	Government agency with the mandate to provide technical support for agricultural and forest related development.	
Royal Forest Department (RFD), Ministry of Natural Resources and Environment, Thailand	Government agency with the mandate to develop policies and plans for forests and forest management.	
Department of Groundwater Resources (DGR), Ministry of Natural Resources and Environment, Thailand	Government agency responsible for the sustainable management of groundwater resources.	

Environment, Thailand		
Department of Water Resources (DWR), Ministry of Natural Resources and Environment, Thailand	Government agency responsible for the implementation of basin-based integrated water resources management.	
Ministry of Defence (MOD), Office of the Permanent Secretary, Thailand	Government agency responsible for national security, territorial integrity, and national defence.	
Department of Agriculture (DOA), Ministry of Agriculture and Food Industry, Malaysia	Government agency responsible for agricultural production and food processing.	Will provide technical expertise to the project final design and during project implementation, taking the lead on particular project activities.
Department of Fisheries (DOF), Ministry of Agriculture and Food Industry, Malaysia	Government agency responsible for policies, regulation, and management of capture fisheries and aquaculture.	
Forestry department of peninsular Malaysia (FDPM) Ministry of Environment and Water (MEWA), Malaysia	Government agency with the mandate to provide the technical support for forest management and forest protection.	
National Disaster Management Agency (NADMA), Prime Minister's Office, Malaysia	Government agency responsible for the development of policies, regulation and plans for the prevention of natural disaster prevention and control.	
Provincial office of Natural Resources and Environment Narathiwat (Nara)	Province Government Agencies responsible for the management of water	Will provide on-the-ground support to project design and implementation

thiwat.mnre), Narathiwat province, Thailand	r, natural resources and the protection of the environment.	on. Will also be periodically engaged based on stakeholder engagement plan (e.g. workshops and meetings).
Southern Border Provinces Administrative Centre (SBPAC)	Province Government agency responsible for monitoring the work of civilian government agencies and to coordinate with security forces in Thailand's southern provinces.	
Department of Provincial Administration (DOPA), Ministry of Interior, Narathiwat Province, Thailand.	Government agency responsible for local administration, internal security, citizenship, disaster management, road safety, land management, issuance of national identity cards, and public works.	
Province Departments of Environment and Water, Kelantan Province (NAHRIM), Malaysia.	Province Government Agencies responsible for the management of water resources and the protection of the environment.	
National Civil Society Organizations (CSOs), incl. Andaman Organization for Participatory Restoration of Natural Resources, MERCY Malaysia		Co-design and co-implementation of pilots; Will be invited to the annual Stocktaking Meetings
Selected communities in the Golok/Kolok River basin.		Co-design and co-implementation of pilots.
International Civil Society Organizations (CSOs).		Will be invited to the annual Stocktaking Meetings.
Ethnic groups.		Household survey and village focus group discussions to support TDA and SAP. Mainly eliciting livelihood strategies, risk perceptions, and likely behavioural responses.
Private Sector entities, incl. Thai Rubber Association (TRA), the Asian Farmers Association for Sustainable Ru		Will be engaged in the implementation of pilots and post-project upscaling strategies;

<p>ral Development Thailand (SorKorPor), the Thai Oil Palm and Palm Oil Association, the National Fisheries Association of Thailand, the Malaysian Rubber Board (MRB), the Malaysian Palm Oil Association (MPOA), the Malaysian Agricultural Producers Association (MAPA), and the Kelantan Fishermen Association (PENEKA), the Narathiwat office of TAT (Tourism of Thailand), the Thai Ecotourism and Adventure Travel Association (TEATA), the Kelantan Tourism Association (KTA), and the Malaysian Ecotourism Association (MEA).</p>		<p>Will be invited to the annual Stocktaking Meetings.</p>
<p>Donor organizations (e.g. UNDP, JICA, World Bank, ADB)</p>		<p>Will be invited to annual Stocktaking Meetings.</p>

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

Livelihoods in the target basin are highly gendered and study suggest that floods affect women more than men. This disproportional burden is mainly linked to women's roles as primary caregivers and providers of food and fuel that make them more vulnerable when floods and droughts unfold. The UN suggests that 80% of people displaced by climate change are women. This is reflected in the Paris Agreement – signed by Malaysia and Thailand – requesting specific provision for the empowerment of women, recognizing that they are disproportionately impacted. Other studies reveal that natural disasters such as floods and droughts kill in average more women than men. Further, it has been revealed that the stronger the disaster, the wider the gender gap. These studies emphasize the relevance of socially constructed gender-specific vulnerabilities of females built into everyday socioeconomic patterns (e.g. livelihoods) that lead to the relatively higher female disaster mortality rates compared to men.

Adaptation strategies to mitigate floods and reduce erosion will need to consider gender-specific impacts to improve gender equity. ADB identified in a recent study, women's leadership as critical for effective flood risk management, which this project will build on. This project will consider gender explicitly when conducting the TDA and when subsequently developing effective response strategies during the SAP phase and the design of pilots. This initiative will collaborate with other ongoing initiatives (e.g. UNDP) targeting gender mainstreaming and women empowerment. This project will also prioritize the involvement of women in the transboundary workshop process (e.g. SAP) and in the design and implementation of pilot projects.

The project will address gender inequalities already during the project design phase by employing the following strategies: First, the socioeconomic analysis will include an in-depth gender assessment for the Golok/Kolok River basin, leading to a robust Gender Action Plan (GAP). Second, the selection of national team members (national coordinators and thematic experts) will prioritize women. Third, all workshops and consultation meetings will explicitly target at least 50% female participants. Fourth, the project will reach out and engage actively with women associations in Thailand and Malaysia to capture the on-the-ground perspective on gender inequality. These measures will ensure full participation of women in project design and implementation.

During the project implementation phase, multiple approaches will aim to close the gender gap in access to and control over natural resources and improving women's participation and decision-making. This will include the composition of the Joint Technical Committee and consultant teams for executing the TDA-SAP process. It will also include a focus on developing incentives to close the gender gap on the ground, for instance gendered livelihoods that would further aggravate women's disadvantage due to erosion, floods and droughts.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources; Yes

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women.

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

Economic investments from the private sector are largely linked to the scale of households, which will be involved through associations and cooperatives for agriculture and fisheries. The project's private sector engagement strategy will include, for instance the Thai Rubber Association (TRA), the Asian Farmers Association for Sustainable Rural Development Thailand (SorKorPor), the Thai Oil Palm and Palm Oil Association, the National Fisheries Association of Thailand, the Malaysian Rubber Board (MRB), the Malaysian Palm Oil Association (MPOA), the Malayan Agricultural Producers Association (MAPA), and the Kelantan Fishermen Association (PENEKA).

The additional economic sector relevant for the Golok/Kolok River basin is the tourism sector. This project will invite the Narathiwat office of TAT (Tourism of Thailand), the Thai Ecotourism and Adventure Travel Association (TEATA), the Kelantan Tourism Association (KTA), and the Malaysian Ecotourism Association (MEA).

All listed sectors have clear incentives to engage with this project, as all have been increasingly affected by floods. Several processes have been established between Government departments and these private sector organizations. These existing relationships will provide an effective foundation for this project's private sector engagement strategy. The project will engage with private sector entities in partnership with respective Government departments, present the project objectives and the proposed process and identify the roles specific private sectors entities can play. The engagement process will be focused on identifying the benefits the project can generate for private sector entities (e.g. mitigate flood risks for agricultural production, river mouth siltation for fishing sector, or land degradation due to droughts or floods on tourism sector) and design collaborations for specific project activities, including pilots.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

Risks	Rating	Risk Mitigating Measures
Climate variability and change	Low	The TDA process will include the best available climate change data to ensure the development of climate resilient solutions.
Lack of stakeholder involvement at community level	Medium	The project will implement a highly participatory approach at the local level, involving meetings and workshops in the Provinces that connect community leaders and Central Government decision makers. The project will further co-design and co-implementation pilot studies with communities.
Lack of support from ministries/local authorities	Low	Continued engagement of Ministries and local Governments to ensure strong buy-in and ownership.
<p>Risks related to COVID-19:</p> <p>a) Delays due to COVID-19 lead to slow implementation or stalling, and/or impacts the stakeholder engagement process.</p> <p>b) Impacts from COVID-19 affects the availability of technical expertise and capacity.</p> <p>c) Enabling environment and changing government priorities/ availability of co-financing.</p>	Medium	<p>Potential impacts of COVID-19 will be closely monitored.</p> <p>a) The project will as part of Output 1.6. assess and strengthen tools for remotely engaging actors and support remote project design and supervision tools for national and local authorities. Furthermore, the project will implement adaptive management, and the work plan and stakeholder engagement plan would be adjusted, if necessary, to reflect the impacts of COVID-19. It is anticipated that, even if face-to-face interactions are reduced, the project would still be able to organize meaningful consultations with local stakeholders through the local representatives. Remote communication via email, online meetings and phone may be used increasingly to adjust to the new situation. Consequently, the project will invest in staff safety and remote working capacities (e.g. provide internet access, dongles etc. to enable out of office work).</p> <p>b) It is not currently anticipated that the COVID-19 restrictions would affect the availability of national expertise. The project relies mostly on national experts for its implementation. With regard to any international experts, it is expected that expertise could be provided remotely, if necessary.</p> <p>c) As explained above, improved transboundary water management and IRWM as well as environmental protection and poverty alleviation are among the priorities of the Governments, which is aligned with the GEF-7 project goals. Measures are being developed under the socioeconomy</p>

d) Future risks of similar crises (including from human-livestock-wildlife interaction)

c response frameworks and the COVID response plans Malaysia and Thailand have put in place. These aim to support the socioeconomic recovery and increase resilience. Availability of co-financing is not anticipated to be affected due to the additional investments in the COVID-19 response.

d) The GEF-7 project will ensure implementation of the One Health approach, contributing to a coordinated approach in promoting public health, animal health, plant health and environmental outcomes, including in the area of human-livestock-wildlife interface.

COVID-19 pandemic: Short, medium, and long-term effects

COVID-19 impacted on the life of many Asian countries, including Thailand and Malaysia. According to the John Hopkins University of Medicine statistics Malaysia had so far 375,054 cases and 1,378 deaths. The majority of the cases have been linked back to COVID outbreaks in Indonesia and most affected are the border provinces to Indonesia. Thailand had so far 42,352 cases and 101 deaths. Data for Thailand shows that most cases have been linked to Myanmar and cross-border crossings. Both countries have been introducing early lockdowns and were able to keep number of infections very low for nearly 12 months of the pandemic. However, the rising number of infections in Indonesia created a substantial deterioration in Malaysia while infections in Myanmar caused Thailand's numbers to increase.

The largely rural and remote parts of the Golok/Kolok River basin constrain the limit the capacity of local authorities and international agencies to deal with pandemics, making them especially vulnerable to the economic and social impacts of the coronavirus. However, the limited international travel these region experiences provided also a shield from larger COVID infection spikes.

The design of the proposed project has taken steps to minimize the risks related to the COVID-19 global pandemic in the area of community health. There is a risk that travel to or from areas where COVID-19 is prevalent could pose a risk to the basins' population, and to project staff, consultants/contractors. The project detailed design will include active steps to mitigate this risk, including training on pandemic-related guidance for project staff and stakeholders during the inception phase, and the expansion of standard monitoring of project operations and ensure that they are in conformity with FAO policies regarding travel, risk reduction, and other areas regarding the COVID-19 pandemic. The Project Manager will report on compliance to the Project Steering Committee and take any necessary steps to protect the health of staff, consultants/contractors, and beneficiaries required by the situation.

The COVID-19 pandemic affects jobs and livelihoods in many sectors, including those related to freshwater resources. The proposed project will improve the resilience of communities to climate change, conservation of the integrity of freshwater ecosystems, and fostering environmentally sustainable water resources management, which in combination will improve the COVID related recovery process and improve the long-term resilience of communities to future shocks.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

In regards to cross-project coordination, both governments plan to invest in the target basin to reduce flood and drought risks. These infrastructure investments will be informed by the TDA by inviting the relevant lead departments for each investment into the SAP project and into the JTC. The evidence base (TDA) resulting from Component 1 will introduce a basin-wide systems-perspective with all relevant trends and cause-effect relationships to these stakeholders. Then, pipeline investments will be discussed and the project will support the assessment and redesign of these investments to improve basin-wide water security. Cross-project coordination will be further strengthened by regular meetings and workshops, including annual stocktaking events.

In regards to the institutional structure of the project, the Project Management Unit (PMU) will be at the core of the project. Considering the transboundary context of the Golok/Kolok River basin, the PMU will be managed by a third party (tbd) endorsed by both Governments. The selection of the third party and the design of detailed execution arrangements will be the focus of the project preparation phase and will consider the substantial coordination challenges across multiple levels of governance and between both countries. Pilot activities defined under Component 3 will be executed by Government agencies. The exact constitution will be designed during the PPG phase. While it will be critical to have (a) third party(ies) managing project activities, many water management related technical processes will be coordinated by the Joint Committee for the Golok/Kolok River. This will involve various central and province level government agencies:

On the Thai side, the Office of National Water Resources (ONWR) in close collaboration with Department of Water Resources (DWR) and the Royal Irrigation Department (RID) will lead the project. On the Malaysian side, the Water Resources, Drainage, and Hydrology Division under the Ministry of Environment and Water (MEWA) will lead the project in close collaboration with the Department of Irrigation and Drainage (DID). Other central government agencies will be incorporated in both countries according to their mandate to establish effective policy and planning links for agriculture, forest management, fisheries and fish management, pollution control, poverty alleviation, and conservation.

Province government agencies in Narathiwat (TH) and Kelantan (MY) will play a major role during the TDA and the SAP to ensure the most comprehensive fact-finding outcomes and the best possible contextualization of the ultimate action plan. Both will ensure that implementation investments will not encounter unexpected barriers on the ground. The project will also work extensively with local communities and their representatives to identify the problems affecting, for example, the fishing and farming communities, to seek their active input to develop appropriate solutions to the problems identified.

During the PPG phase, projects in other parts of Thailand and Malaysia will be identified that have a similar focus (e.g. erosion, floods and droughts). The project will connect with these baseline project teams to facilitate cross-basin learning in both countries, which will be partly done through topic specific workshops and partly through the stakeholder engagement process.

Component 5 includes a bundle of monitoring focused activities that will support project execution. This will be largely handled by the PMU and presented to the project Steering Committee, including the lead government agencies (ONWR in Thailand and DID in Malaysia) and FAO (Implementing Agency). In addition, FAO will conduct a mid-term and a final review and a series of on-the-spot checks of executing partners.

Component 6 will be focused on coordinating project activities with baseline projects and with projects in the IW LEARN network. This will involve a series of workshops with baseline project teams to create synergies and facilitate cross-project learning. Budget will also be provided for the project team to engage in IW LEARN, participate in IW LEARN conferences, and communicate project progress and lessons learnt on a project webpage.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions?

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

The project supports the spirit of the Malaysian and Thai agreement on agricultural co-operation signed in 1979 and the work outline in the meetings of the Joint Steering Committee, Joint Technical Working Group and Joint Monitoring and Evaluation Team of the Joint Development of the Golok River Basin established in 1997. The mandate of the Joint Monitoring and Evaluation team is to continue studying changes to the river mouth and provide updates to the Joint Technical Working Group. This work involved the establishment of a telemetering station. The Joint Technical Working Group brings together hydrological experts on topics affecting the river mouth, including sediment dynamics, floods, and climate change. Its mandate is to discuss data, study results, and develop recommendations for the Joint Steering Committee. The Joint Steering Committee's mandate involves the deliberation of recommendations made by the Joint Technical Working Group and trigger actions in the respective national agencies.

The work proposed in this project is fully aligned with the mandate of the Joint Steering Committee and is of benefit and relevance to local communities and authorities. Most recently, the two lead agencies of this proposal – ONWR in Thailand and MEWA in Malaysia – have drafted an MoU on joint IRBM, which is currently with ONWR for review. The proposed GEF initiative would fully support this transboundary basin planning initiative of Thailand and Malaysia.

The project is also supporting core pillars of water resource policy in both countries. Thailand's new 20-year Master Plan on Water Resources and the underpinning Water Resource Act from 2018 aim for improved basin management and explicitly target transboundary solutions for improved flood protection. The National Water Master Plan, which include six core strategies this project will help implementing in the Golok/Kolok River Basin:

1. Management of water for consumption: Development of water supply in rural and urban communities, improving existing waterworks system, and expanding water networks to cover nearby communities, ensuring quality and affordable consumption of water throughout the country.
2. Water security for production sector: Ensuring environmental flows and the security of agricultural production and industrial sectors.
3. Flood and inundation management: Flood mitigation, dredging of primary waterways, enhancing water drainage capacity, developing 12 water containment areas around the Chao Phraya River basin, clearing waterway obstructions in the South.
4. Water quality management: Ensuring satisfactory water quality, developing wastewater management system in 201 areas, enhancing capacity of existing wastewater management systems, reducing volumes of wastewater in Chao Phraya, Tha Chin, Pasak, Mun, and Chi River basins, recycling treated wastewater, rehabilitating rivers and canals throughout the country.
5. Rehabilitation of forest watersheds and degraded areas: Ecosystem focused rehabilitating of forest watersheds, preventing soil erosion in the areas with steep slopes, developing forest watershed conservation plan.
6. Management and administration: Establishing and systematizing water-related organizations, law, database, and publicity, enhancing capacity of national water management, promoting public participation and awareness, evaluating operational performances, developing related technologies and innovations, establishing hydro informatics data centre as an ad-hoc centre in case of water-related emergencies.

The improved transboundary coordination of floods, (point 3) and other water-related emergencies (point 6) will be the core focus of this project. Furthermore, this project will also support the implementation of strategies 1, 2, and 5 in the Golok/Kolok River basin and strengthen the cross-sector mandate of ONWR.

The project will also contribute to Thailand's strategy to achieve the SDGs. Thailand has acknowledged the need to adapt to climate change and highlights risks emerging from floods, droughts, and erosion. The project will develop solutions for all three risks for the Golok/Kolok River basin and will thereby strengthen Thailand's efforts to achieve a range of SDGs, including SDG 1 (poverty), SDG 2 (hunger), SDG 3 (healthy lives), SDG 5 (gender equality), SDG 6 (water), SDG 10 (inequality), SDG 13 (climate change), SDG 15 (ecosystems), and SDG 16 (peace). Thailand's core coordination group for the achievement of SDGs is the National Committee for Sustainable Development (CSD). The project will synthesize lessons learned from the TDA and from the pilot projects and present these to the CSD for potential upscaling in other parts of the country.

Correspondingly, Malaysia's National Water Resource Policy (2012) is targeting improved water security (e.g. floods), water resource sustainability (incl. groundwater), and multi-stakeholder partnerships for effective Integrated Water Resource Management (IWRM) and Integrated River Basin Management (IRBM). It outlines 18 targets in the fields of water resource security and water resource sustainability:

Target 1: Development of a comprehensive water resource information system

Target 2: Strengthening database framework

Target 3: Standardise multiple scientific processes and methods related to evaluation and analysis of state, status and condition of water resources.

Target 4: Set national standards to determine thresholds for water resources to protect the availability and integrity of waterbodies.

Target 5: Reduce Vulnerability of water resources to impacts and threats as well as strengthen adaptability to ecosystems and physical changes

Target 6: Develop water resource conservation plans for strategic, sensitive and critical water resource areas and bodies.

Target 7: Optimise options for alternative, conjunctive or continuous use of different water resource types to reduce stress on existing sources.

Target 8: Adopt a national disaster risk reduction preparedness and response plan for water resources to introduce measures for preparedness and response, as well as reduction of risks and threats of disasters from and to water resources.

Target 9: Adopt national criteria for water resources characterisation and standards.

Target 10: Determine Priority for water resource use, particularly in times of crisis or threat.

Target 11: Protect condition and state of water resources, catchment and bodies.

Target 12: Adopt economic measures to value water resources.

Target 13: Adopt measures to determine optimum water quality and yield.

Target 14: Adopt measures to implement water demand management nationwide.

Target 15: Establishment of mechanisms for formal and informal consultation on matters related to water resources.

Target 16: Develop framework for stakeholder collaboration in water resource governance.

Target 17: Build capacity of key water resources stakeholders.

Target 18: Improve understanding and awareness of the importance of water resources security and sustainability.

This project supports the implementation of targets 5, 8, 11, and 18 by improving transboundary and cross-sector coordination for the Golok/Kolok River basin. The evidence-based process will link Malaysia's investments in the Golok/Kolok River basin to Thailand's basin planning and thereby establish a transboundary basin management process for the target basin. In parallel, it will strengthen the cross-sectoral coordination for water management in the basin, by mainstreaming flood mitigation and erosion control. The combination of cross-sector and transboundary coordination will improve the resilience of communities in the Golok/Kolok River basin to floods and erosion.

The project supports the realisation of several SDGs (directly and indirectly) and their associated targets, particularly SDG6 (freshwater) and contributing to SDG15 (oceans), SDG 15 (terrestrial), SDG 5 (gender). In Malaysia, the Economic Planning Unit (EPU) is the focal point for the achievement of Sustainable Development Goals (SDGs) and the SDG Council is the cross-ministerial coordination body. The project will mainly engage and support the work of the Working Committee Environment and Natural Resources under the SDG Council and the Working Committees on Wellbeing and Inclusivity. One of Malaysia's strategies is to improve the resilience of livelihoods and the eradication of poverty. This will be supported by the project activities and its focus on rural areas of Kelantan State and many natural resource dependent livelihoods, e.g. fishing and farming. Reducing flood and drought risks and erosion will have positive impacts on community resilience, particularly farmers and fishermen, and ultimately help Malaysia achieving the SDGs.

8. Knowledge Management

Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

Knowledge management will be an important aspect of the project, directly incorporated into several of the project outputs. In particular, the knowledge enhancement process leading to the formulation of the TDA will ultimately produce a number of knowledge tools and communication / dissemination materials. These materials produced will be widely shared in the region. The project will establish its website, following IW LEARN standards, and populate it with progress reports, documents, webinars and other project products. In particular, at least 1% of total project budget will be set aside for knowledge management and information exchange activities organized by IW LEARN (e.g. IWC participation, information dissemination through IW LEARN platforms and networks, twinning exercises). Knowledge exchange will include the participation in relevant regional and international workshops and conferences (such as GEF International Waters Conferences, World Water Forum, and World Water Week). The project's legacy will be consolidated in the Project Final Report.

Furthermore, relationships will be developed with baseline projects to establish an active knowledge exchange network between similar projects in the region. This will allow the identification and realisation of synergies between projects. While there are no development projects active or announced for the Golok/Kolok River basin that focus on floods, droughts or erosion, except government-funded infrastructure projects, a variety of projects exist in other parts of Thailand (e.g. Flood mitigation in the Chao Phraya, Drought management in Northeast Thailand) and Malaysia (e.g. Flood mitigation in Penang and the neighbouring Kelantan River, or the drought-focused project SEA HOT in the neighbouring Kelantan River basin). The project will host annual workshops with these project teams to learn from these initiatives and to showcase project results based, for instance, on the TDA and on pilots. These results will be documented in a series of knowledge products that are easily accessible to other projects in the region, disseminated via the project webpage and during the scheduled series of workshops and conferences.

Furthermore, the project aims to include field visits to facilitate an in-depth learning exchange between other relevant basins. Execution partners for Component 6 will be responsible for developing and maintaining these cross-project relationships, identifying which project outputs might be beneficial inputs for other projects (and vice versa), for sharing experiences, and for learning from other projects.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF

CEO Endorsement/Approval MTR

TE

Low

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

At Project level, FAO applies a risk management process focused specifically on individual Project risks, with the purpose of:

1. Identifying, assessing and managing social and environmental risks and potential project impacts;
2. Adopting a hierarchy of mitigation measures;
3. Promoting sustainable food and farming systems.
4. FAO has nine (9) social and environmental standards that must be met by any Project funded or approved by the Organization. The following table gives an overview on the assessment of these 9 standards for the propose project:

Annex 1: Trigger questions

	Question	YES	NO
1	Would this project: <ul style="list-style-type: none"> · result in the degradation (biological or physical) of soils or undermine sustainable land management practices; or · include the development of a large irrigation scheme, dam construction, use of waste water or affect the quality of water; or · reduce the adaptive capacity to climate change or increase GHG emissions significantly; or · result in any changes to existing tenure rights^[1] (formal and informal^[2]) of individuals, communities or others to land, fishery and forest resources? 		X
2	Would this project be executed in or around protected areas or natural habitats, decrease the biodiversity or alter the ecosystem functionality, use alien species, or use genetic resources?		X
3	Would this project: <ul style="list-style-type: none"> · Introduce crops and varieties previously not grown, and/or; · Provide seeds/planting material for cultivation, and/or; · Involve the importing or transfer of seeds and or planting material for cultivation or research and development; · Supply or use modern biotechnologies or their products in crop production, and/or · Establish or manage planted forests? 		X
4	Would this project introduce non-native or non-locally adapted species, breeds, genotypes or other genetic material to an area or production system, or modify in any way the surrounding habitat or production system used by existing genetic resources?		X
	Would this project: <ul style="list-style-type: none"> · result in the direct or indirect procurement, supply or use of pesticides^[3]: § on crops, livestock, aquaculture, forestry, household; or 		X

5	<p>§ as seed/crop treatment in field or storage; or</p> <p>§ through input supply programmes including voucher schemes; or</p> <p>§ for small demonstration and research purposes; or</p> <p>§ for strategic stocks (locust) and emergencies; or</p> <p>§ causing adverse effects to health and/or environment; or</p> <ul style="list-style-type: none"> · result in an increased use of pesticides in the project area as a result of production intensification; or · result in the management or disposal of pesticide waste and pesticide contaminated materials; or · result in violations of the Code of Conduct? 		
6	Would this project permanently or temporarily remove people from their homes or means of production/livelihood or restrict their access to their means of livelihood?		X
7	Would this project affect the current or future employment situation of the rural poor, and in particular the labour productivity, employability, labour conditions and rights at work of self-employed rural producers and other rural workers?		X
8	Could this project risk overlooking existing gender inequalities in access to productive resources, goods, services, markets, decent employment and decision-making? For example, by not addressing existing discrimination against women and girls, or by not taking into account the different needs of men and women.		X
9	<p>Would this project:</p> <ul style="list-style-type: none"> · have indigenous peoples* living outside the project area¹ where activities will take place; or · have indigenous peoples living in the project area where activities will take place; or · adversely or seriously affect on indigenous peoples' rights, lands, natural resources, territories, livelihoods, knowledge, social fabric, traditions, governance systems, and culture or heritage (physical² and non-physical or intangible³) inside and/or outside the project area; or · be located in an area where cultural resources exist? <p>* FAO considers the following criteria to identify indigenous peoples: priority in time with respect to occupation and use of a specific territory; the voluntary perpetuation of cultural distinctiveness (e.g. languages, laws and institutions); self-identification; an experience of subjugation, marginalization, dispossession, exclusion or discrimination (whether or not these conditions persist).</p> <p>¹The phrase "Outside the project area" should be read taking into consideration the likelihood of project activities to influence the livelihoods, land access and/or rights of Indigenous Peoples' irrespective of physical distance. In example: If an indigenous community is living 100 km away from a project area where fishing activities will affect the river yield which is also accessed by this community, then the user should answer "YES" to the question.</p> <p>²Physical defined as movable or immovable objects, sites, structures, group of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance located in urban or rural settings, ground, underground or underwater.</p> <p>³Non-physical or intangible defined as "the practices, representations, expressions, knowledge and skills as well as the instruments, objects, artifacts and cultural spaces associated therewith that communities, groups, and in some cases individuals, recognize as part of their spiritual and/or cultural heritage"</p>		X

Based on the answers provided in the Environmental and Social Screening Checklist, the application of these standards for the proposed project allows concluding that the proposed action is classified as LOW risk

[1] [1] Tenure rights are rights to own, use or benefit from natural resources such as land, water bodies or forests

[2] Socially or traditionally recognized tenure rights that are not defined in law may still be considered to be 'legitimate tenure rights'.

[3] Pesticide means any substance, or mixture of substances of chemical or biological ingredients intended for repelling, destroying or controlling any pest, or regulating plant growth.

Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
Golok Basin - Climate Risk Screening Summary	
FAO ES Screening Checklist - Golok	
Project Risk Certification	

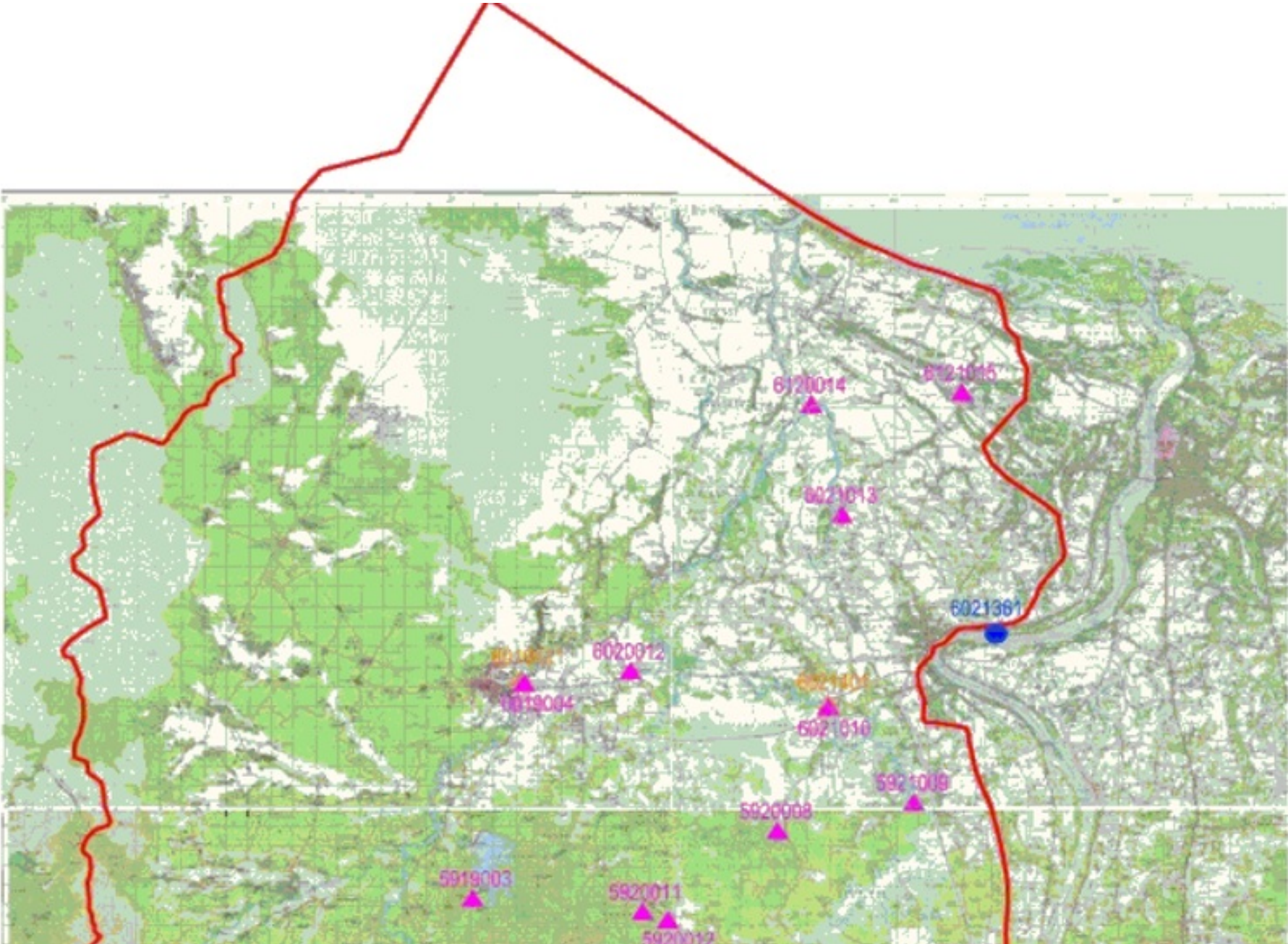
Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Jana Santhiran Muniayan	GEF Operational Focal Point	Ministry of Environment and Water	9/15/2021
Jatuporn Buruspat	Permanent Secretary, GEF Operational Focal Point	Ministry of Natural Resources and Environment Thailand	10/18/2021

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place





Disclaimer: This project is without prejudice to Thailand's or Malaysia's rights with regard to the land boundary under international law.